Appendix A. Unit Conversion Chart

Table A-1. Metric - English unit conversions.

	English Units	Metric Units	To Convert	Example
Distance	Miles (mi)	Kilometers (km)	1 mi = 1.61 km 1 km = 0.62 mi	3 mi = 4.83 km 3 km = 1.86 mi
Length	Inches (in) Feet (ft)	Centimeters (cm) Meters (m)	1 in = 2.54 cm 1 cm = 0.39 in 1 ft = 0.30 m 1 m = 3.28 ft	3 in = 7.62 cm 3 cm = 1.18 in 3 ft = 0.91 m 3 m = 9.84 ft
Area	Acres (ac) Square Feet (ft^2) Square Miles (mi^2)	Hectares (ha) Square Meters (m^2) Square Kilometers (km^2)	1 ac = 0.40 ha 1 ha = 2.47 ac 1 ft^2 = 0.09 m^2 1 m^2 = 10.76 ft^2 1 mi^2 = 2.59 km^2 1 km^2 = 0.39 mi^2	3 ac = 1.20 ha 3 ha = 7.41 ac 3 ft^2 = 0.28 m^2 3 m^2 = 32.29 ft^2 3 mi^2 = 7.77 km^2 3 km^2 = 1.16 mi^2
Volume	Gallons (gal) Cubic Feet (ft^3)	Liters (L) Cubic Meters (m^3)	1 gal = 3.78 L 1 L= 0.26 gal 1 ft^3 = 0.03 m^3 1 m^3 = 35.32 ft^3	3 gal = 11.35 L 3 L = 0.79 gal 3 ft^3 = 0.09 m^3 3 m^3 = 105.94 ft^3
Flow Rate	Cubic Feet per Second (cfs)[a]	Cubic Meters per Second (m^3/sec)	1 cfs = 0.03 m^3/sec 1 m^3/sec = 35.31cfs	3 ft^3/sec = 0.09 m^3/sec 3 m^3/sec = 105.94 ft^3/sec
Concentration	Parts per Million (ppm)	Milligrams per Liter (mg/L)	1 ppm = 1 mg/L[b]	3 ppm = 3 mg/L
Weight	Pounds (lbs)	Kilograms (kg)	1 lb = 0.45 kg 1 kg = 2.20 lbs	3 lb = 1.36 kg 3 kg = 6.61 lb
Temperature	Fahrenheit (°F)	Celsius (°C)	°C = 0.55 (F - 32) °F = (C x 1.8) + 32	3 °F = -15.95 °C 3 °C = 37.4 °F

[a] 1 cfs = 0.65 million gallons per day; 1 million gallons per day is equal to 1.55 cfs.

[b] The ratio of 1 ppm = 1 mg/L is approximate and is only accurate for water.

Appendix B. Distribution List

Little Salmon River Watershed Advisory Group

Victor Armacost, Chairman
Albert Becker
Jim Blair
Doug Boggan
Bill Brown
Steve Campbell
Darrell Campbell
Ferrel Crossley
Dean Dryden
Linnea Hall
John Lillehaug
Brian O'Morrow
Neal Osborn
Ed Raney
Sandy Schiffman
New Meadows Ranger District (position vacant)

Little Salmon River Technical Advisory Committee

Dale Allen, Idaho Fish and Game
Kim Apperson, Idaho Fish and Game
Kirk Campbell, Idaho Department of Agriculture
Kalissa Copeland, Idaho Association of Soil Conservation Districts
Craig Johnson, BLM
Russ Manwaring, West Central Highlands Resource Conservation District
Felix McGowan, Nez Perce Tribe
Jim Paradiso, USFS
Tom Yankey, NRCS

New Meadows Public Library

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Appendix C. Additional Data and Load Equations

Little Salmon River

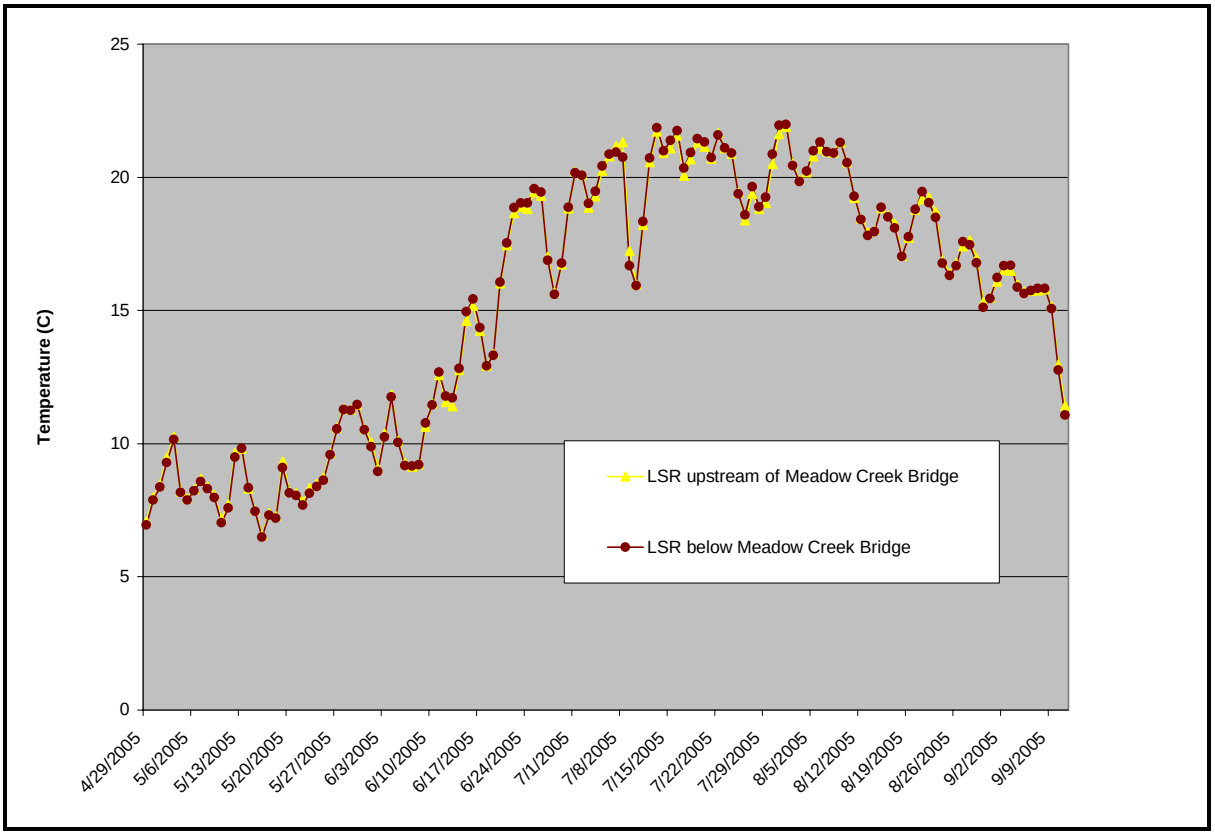

Figure C-1 Little Salmon River 2005 Average Daily Temperature Data near the 45th Parallel.

Table C-1. LSR 1 (Little Salmon River at Riggins) 2004 Results

LSR-1 (Riggins Bridge)								
Date	Cond.	TDS	pH	Discharge	SSC	TP	OP	NO3
4/15/2004					no sample			
4/29/2004	74	38	7.82	1150	6.5	<0.05	<0.05	
5/13/2004	69	37	7.71	1220	5.3	<0.05	<0.05	
5/26/2004	59	31	7.71	1670	4.9	<0.05	<0.05	
6/10/2004	53	26	7.82	2020	7.1	<0.05	<0.05	
6/23/2004	68	37	7.76	995	0.7	<0.05	<0.05	
7/8/2004	100	52	7.84	486	1.4	<0.05	<0.05	
7/22/2004	115	58	7.88	311	2	<0.05	<0.05	<0.2
8/4/2004	132	68	7.97	224	2.5	<0.05	<0.05	<0.2
8/19/2004	140	72	7.99	206	1.4	<0.05	<0.05	3.3
8/31/2004	123	62	7.8	243	1.8	<0.05	<0.05	<0.2
9/16/2004	108	58	7.78	347	2.9	<0.05	<0.05	<0.2
9/29/2004	122	61	7.73	249	1	<0.05	<0.05	<0.2

Table C-2. LSR 2 (Little Salmon River at White Bird Ridge Road) 2004 Results

LSR-2 (Whitebird)											
Date	DO	Temp	%Sat	Cond.	TDS	pH	Discharge	SSC	TP	OP	NO3
4/15/2004	12.53	5.3	97.7	64	31	7.96	NA	5.2	<0.05	<0.05	
4/29/2004	12.88	5.1	101.1	47	24	7.74	NA	4.8	<0.05	<0.05	
5/13/2004	12.64	5.3	99.9	45	23	7.63	854	1.7	<0.05	<0.05	
5/26/2004	11.48	8.2	96.8	48	25	7.66	1208	5.1	<0.05	<0.05	
6/10/2004	11.22	9.6	98.9	48	24	7.84	1688	5.1	<0.05	<0.05	
6/23/2004	10.73	12.3	100.7	41	21	7.71	691	<0.3	<0.05	<0.05	
7/8/2004	10.93	12.4	105	82	42	7.92	326	0.9	<0.05	<0.05	
7/22/2004	8.41	16.2	86.3	84	42	7.87	217	0.9	<0.05	<0.05	<0.2
8/4/2004	9.1	16.1	92.3	100	50	7.99	114	0.5	<0.05	<0.05	<0.2
8/19/2004	9.16	16.6	93.6	116	53	8.07	117	1.3	0.06	<0.05	0.5
8/31/2004	8.93	14.9	88.5	88	45	7.92	148.5	1.1	<0.05	<0.05	<0.2
9/16/2004	10.55	11.1	92.7	74	38	7.79	221.3	2.6	<0.05	<0.05	<0.2
9/29/2004	10.85	10.6	97.3	82	41	7.84	163	1.3	<0.05	<0.05	<0.2
10/14/2004	11.37	6.9	93.6	92	46	7.73					
			Discharge NA not enough weight for stable flow measurements								

Brundage Reservoir

Table C-3. July 12, 2005 Brundage Reservoir 2:00 pm

Depth (m)	Temperature (C)
1	16.8
2	16.43
3	16.21
4	16.15
5	14.42
6	12.39
7	11.69
8	11
9	10.79
10	10.49
11	10.21
12	9.66

Table C-4. July 19, 2005 Brundage Reservoir 6:00 pm

Depth (m)	Temperature (C)
1	11.55
2	11.94
3	12.32
4	12.73
5	14.14
6	18.23
7	18.54
8	18.61
9	18.64
10	18.66

Table C-5. July 26, 2005 Brundage Reservoir 5:45 pm

Depth (m)	Temperature
1	19.43
2	19.28
3	18.76
4	18.63
5	18.27
6	17.37
7	15.66
8	14.11
9	13.09
10	12.13

Table C-6 August 2, 2005 Brundage Reservoir 7:00 pm

Depth (m)	Temperature (C)
1	19.82
2	19.82
3	19.79
4	19.23
5	19.06
6	18.17
7	16.99
8	16.13
9	15.41
10	14.91

Table C-7. August 9, 2005, Brundage Reservoir 5:30 pm

Depth (m)	Temperature (C)
1	20.82
2	20.63
3	20.1
4	20
5	19.66
6	19.25
7	18.46
8	18.43

August 18, 2005 6:45

Reading at 1 meter below the surface: 19.11 degrees Celsius
Another reading at 2 meters below the surface: 18.77 degrees Celsius. Water obviously met standard so stopped measurements.

Load Equation:

For loads in kg/day: ((pollutant target concentration in ug/L*(flow in cfs*28.32 conversion factor of liters/cf)*60 seconds*60 minutes*24 hours)/1000000)/1000

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Appendix D. Tributary Temperature Analysis

Tributaries to the Little Salmon River in the meadows area generally flow from the east or west, from surrounding forested mountains to the Meadow Valley. The two largest drainages, Goose Creek and Mud Creek drain south through mountain valleys that parallel the river until they turn southeast (Mud Creek) or west (Goose Creek) to enter the Meadows Valley. Potential natural vegetation along these tributaries is assumed to vary from open coniferous forest in the headwaters, to a forest/shrub mix at the interface with forests, then onto a shrub/grass meadow community in the smaller meadows that line most of the tributaries at lower elevations. Actual shrub species may vary from alders and dogwoods to willows, but all are willow-like in stature and shade potential, and assumed to be more dominant along the stream than grass. A number of the tributaries pass through a grass meadow as they cross the Meadow Valley, where grass is assumed to be the more dominant component along streams with some willow-like shrubs as a minor component.

The thermal infrared flyover done in August 2004 combined with actual flow information and hydrological modeling, showed that the volume of the river became great enough just above Four Mile Creek that tributary contributions of water to the Little Salmon River had no effect on temperature. Thus, this TMDL examines tributaries from Vick Creek up to Four Mile Creek.

For each tributary, the plant community varies from coniferous forest in the headwaters, to a forest/shrub mix community at the interface, a willow-like shrub community in the smaller meadows, and a grass/willow community on most tributaries in the Meadow Valley area. Each stream and community type has varying widths depending on the size of the drainage area for the tributary. Loading capacities for tributaries (Tables D-4 through D-12) vary according to shade targets (Table D-2, Figure D-1) with forests having shade targets between 50% (0.5) and 80% (0.8) down to grass/willow areas with targets between 5% (0.05) and 20% (0.2).

For determining targets, channel width was determined as shown in Table D-1.

Existing shade on the tributaries varied from 50-80% in forested headwaters to 0% in grass/willow areas of Meadow Valley as shown in tables 2-13 below.

Although it may seem like the streams needing the largest reduction in solar load to meet their targets are the worst streams, in reality it is the larger drainages that can contribute the most excess load to the Little Salmon River. However, this is also dependent upon flow and some of the larger drainages like Goose Creek are managed for flow such that the return flow into the Little Salmon River does not reflect natural conditions. Determining the best places for load reductions will need to be worked out in the implementation plan, using local knowledge of natural conditions.

Table D-1. Drainage Area Size and Natural Stream Width.

Drainage	Area (acres)	Area ($miles^2$)	Natural width at Mouth (m)
Mud Creek	20,323	31.8	12 (39.37 ‘)
Big Creek	18,580	29	12 (39.37’)
Little Creek	11,786	18.4	9 (29.53’)
Goose Creek	25,700	40	12 (39.37’)
Threemile Creek	4,497	7	5 (16.4’)
Fourmile and Martin Creeks (+ west side drainages)	8,983	14	2-3 (6.56’-9.84’)

Table D-2. Excess Load (Existing Minus Potential) for Drainages in the Little Salmon River Meadows Area.

Water Body	Excess Load (kWh/day)
Little Salmon River	365,630
Upper Goose Creek	16,942
Mud Creek	95,694
Big Creek	93,846
West Branch Goose Creek	68,998
East Branch Goose Creek	76,391
Little Mud Creek	46,615
Little Creek	43,227
Threemile Creek	34,499
Middle Mud Creek	17,044
Vick Creek	9,245
Mill Creek	7,190

Table D-3. Existing and Potential Solar Loads for Little Creek.

Segment Length (~miles)	Existing Shade (fraction)	Existing Summer Load (kWh/m2/day)	Target or Potential Shade (fraction)	Potential Summer Load (kWh/m2/day)	Potential Load minus Existing load (kWh/m2/day)	**Little Creek**
1	0.5	3.19	0.8	1.276	-1.91	forest/shrub-13.1’
0.3	0.3	4.466	0.5	3.19	-1.28	willow-13.1’
0.4	0.4	3.828	0.5	3.19	-0.64	willow
0.3	0.3	4.466	0.5	3.19	-1.276	willow
0.4	0.4	3.828	0.8	1.276	-2.552	forest/shrub-13.1’
0.5	0.3	4.466	0.4	3.828	-0.638	willow-16.4’
0.4	0.2	5.104	0.4	3.828	-1.276	willow
2.5	0.1	5.742	0.1	5.742	0	grass/willow-23’
0.6	0.1	5.742	0.3	4.466	-1.276	willow-29.5’
Segment Length (feet)	Segment Area (feet2)	Existing Summer Load (kWh/day)	Natural Stream Width (feet)	Potential Summer Load (kWh/day)	Potential Load minus Existing Load (kWh/day)	
5277.5	69262.1	20535	13.1	8214	-12321	
1584.2	20777.6	8625	13.1	6161	-2464	
2112.3	27707	9857	13.1	8214	-1643	
1584.2	20777.6	8625	13.1	6161	-2464	
2112.3	27707	9857	13.1	3286	-6571	
2640.4	43287.5	17968	16.4	15401	-3850	
2112.3	34636.4	16428	16.4	12321	-5134	
13195.4	303044.6	161715	23	161715	0	
3168.5	93504.4	49901	29.5	38812	-13861	**% Reduction**
Total	**104801**	**303,511**		**260,824**	**-43,227**	**-14**

Table D-4. Existing and Potential Solar Loads for West Branch Goose Creek.

Segment Length (~miles)	Existing Shade (fraction)	Existing Summer Load (kWh/m2/day)	Target or Potential Shade (fraction)	Potential Summer Load (kWh/m2/day)	Potential Load minus Existing load (kWh/m2/day)	**West Branch**
0.5	0.4	3.828	0.6	2.552	-1.28	forest/shrub-39.5'
0.2	0.3	4.466	0.6	2.552	-1.91	
0.3	0.4	3.828	0.6	2.552	-1.28	
0.1	0.2	5.104	0.6	2.552	-2.552	
0.5	0.5	3.19	0.6	2.552	-0.638	
0.2	0.4	3.828	0.6	2.552	-1.276	
0.2	0.2	5.104	0.6	2.552	-2.552	
0.9	0.1	5.742	0.1	5.742	0	grass/willow-39.5'
0.5	0.2	5.104	0.3	4.466	-0.638	willow-39.5'
0.5	0.1	5.742	0.1	5.742	0	grass/willow-39.5'
0.2	0.2	5.104	0.3	4.466	-0.638	willow-39.5'
0.3	0.1	5.742	0.3	4.466	-1.276	
Segment Length (feet)	Segment Area (feet2)	Existing Summer Load (kWh/day)	Natural Stream Width (feet)	Potential Summer Load (kWh/day)	Potential Load minus Existing Load (kWh/day)	
2640.4	103319.2	36963	39.5	24642	-12321	
1056.2	41555.1	17250	39.5	9857	-7393	
1584.2	62343.4	22178	39.5	14785	-7393	
528.1	20777.6	9857	39.5	4928	-4928	
2640.4	103319.2	30803	39.5	24642	-6161	
1056.2	41555.1	14785	39.5	9857	-4928	
1056.2	41555.1	19714	39.5	9857	-9857	
4749.4	57027	99801	39.5	99801	0	
2640.4	103319.2	49285	39.5	43124	-6161	
2640.4	103319.2	55445	39.5	55445	0	
1056.2	41555.1	19714	39.5	17250	-2464	
1584.2	62343.4	33267	39.5	25874	-7393	**% Reduction**
Total	**914309.9**	**409,062**		**340,063**	**-68,998**	**-17**

Table D-5. Existing and Potential Solar Loads for East Branch Goose Creek.

Segment Length (~miles)	Existing Shade (fraction)	Existing Summer Load (kWh/m2/day)	Target or Potential Shade (fraction)	Potential Summer Load (kWh/m2/day)	Potential Load minus Existing load (kWh/m2/day)	**East Branch**
0.1	0.2	5.104	0.6	2.552	-2.55	forest/shrub-39.5'
0.3	0.3	4.466	0.6	2.552	-1.91	
0.3	0.4	3.828	0.6	2.552	-1.28	
0.1	0.3	4.466	0.6	2.552	-1.914	
0.1	0.2	5.104	0.3	4.466	-0.638	willow-39.5'
0.5	0.4	3.828	0.6	2.552	-1.276	forest/shrub-39.5'
0.3	0.2	5.104	0.3	4.466	-0.638	willow-39.5'
0.2	0.1	5.742	0.3	4.466	-1.276	
0.2	0.2	5.104	0.3	4.466	-0.638	
0.6	0	6.38	0.1	5.742	-0.638	grass/willow-39.5'
0.5	0.1	65.742	0.1	5.742	0	
0.9	0	6.38	0.1	5.742	-0.638	
0.1	0.1	5.742	0.3	4.466	-1.276	willow-39.5'
0.1	0	6.38	0.3	4.466	-1.914	
Segment Length (feet)	Segment Area (m2)	Existing Summer Load (kWh/day)	Natural Stream Width (feet)	Potential Summer Load (kWh/day)	Potential Load minus Existing Load (kWh/day)	
528.1	20777.6	9857	39.5	4928	-4928	
1584.2	62343.4	25874	39.5	14785	-11089	
1584.2	62343.4	22178	39.5	14785	-7393	
528.1	20777.6	8625	39.5	4928	-3696	
528.1	20777.6	9857	39.5	8625	-1232	
2640.4	103319.2	36963	39.5	24642	-12321	
1584.2	62343.4	29571	39.5	25874	-3696	
1056.2	41555.1	22178	39.5	17250	-4928	
1056.2	41555.1	19714	39.5	17250	-2464	
3168.5	124676.1	73927	39.5	66534	-7393	
2640.4	103319.2	55445	39.5	55445	0	
4749.4	187019.6	110890	39.5	99801	-11089	
528.1	20777.6	11089	39.5	8625	-2464	
528.1	20777.6	12321	39.5	8625	-3696	**% Reduction**
Total	**893531.9**	**448,489**		**372,098**	**-76,391**	**-17**

Table D-6. Existing and Potential Solar Loads for Upper Goose Creek.

Segment Length (~miles)	Existing Shade (fraction)	Existing Summer Load (kWh/m2/day)	Target or Potential Shade (fraction)	Potential Summer Load (kWh/m2/day)	Potential Load minus Existing load (kWh/m2/day)	**Upper Goose (from Goose Lake)**
0.8	0.4[a]	3.828	0.5	3.19	-1	forest-49.2'
0.3	0.3[b]	4.466	0.5	3.19	-1	
0.5	0.5	3.19	0.5	3.19	0	
1.2	0.6	2.552	0.5	3.19	-0.638	
0.4	0.5	3.19	0.5	3.19	0	
0.5	0.4	3.828	0.5	3.19	-0.638	
0.6	0.3	4.466	0.5	3.19	-1.276	
0.6	0.5	3.19	0.5	3.19	0	
2.1	0.6[c]	2.552	0.5	3.19	-0.638	
1.7	0.5	3.19	0.5	3.19	0	
0.1	0.4	3.828	0.5	3.19	-0.638	
0.1	0.3	4.466	0.5	3.19	-1.276	
0.2	0.6[d]	2.552	0.5	3.19	-0.638	
0.1	0.3[e]	4.466	0.5	3.19	-1.276	forest/shrub-49.2'
0.4	0.4	3.828	0.5	3.19	-0.638	
0.2	0.2	5.104	0.5	3.19	-1.914	
Segment Length (feet)	Segment Area (feet2)	Existing Summer Load (kWh/day)	Natural Stream Width (feet)	Potential Summer Load (kWh/day)	Potential Load minus Existing Load (kWh/day)	
4221.4	207797.1	73927	49.2	61606	-12321	
1584.2	77923.9	32343	49.2	23102	-9241	
2640.4	129873.2	38504	49.2	38504	0	
6333.7	311695.7	73927	49.2	92409	-18482	
2112.3	103319.2	30803	49.2	30803	0	
2640.4	129873.2	46204	49.2	38504	-7701	
3168.5	155847.8	64686	49.2	46204	-18482	
3168.5	155847.8	46204	49.2	46204	0	
11086.4	545467.4	129372	49.2	161715	-32343	
8974.1	441568.9	130912	49.2	130912	0	
528.1	2593.2	9241	49.2	7701	-1540	
528.1	2593.2	10781	49.2	7701	-3080	
1056.2	51949.3	12321	49.2	15401	-3080	
528.1	2593.2	10781	49.2	7701	-3080	
2112.3	103319.2	36963	49.2	30803	-6161	
1056.2	51949.3	24642	49.2	15401	-9241	**% Reduction**
Total	**2363703**	**771,611**		**754,670**	**-16,942**	**-2**

a = solar pathfinder measured 32% shade; b = solar pathfinder measured 28% shade; c = solar pathfinder measured 57%; d = solar pathfinder measured 63%; e = solar pathfinder measured 26%.

Table D-7. Existing and Potential Solar Loads for Threemile Creek.

Segment Length (~miles)	Existing Shade (fraction)	Existing Summer Load (kWh/m2/day)	Target or Potential Shade (fraction)	Potential Summer Load (kWh/m2/day)	Potential Load minus Existing load (kWh/m2/day)	**Threemile**
2.2	0.7	1.914	0.8	1.276	-.64	forest-6.6’
1.1	0.6	2.552	0.8	1.276	-1.28	
0.2	0.4	3.828	0.8	1.276	-2.55	forest/shrub-9.8’
0.3	0.3	4.466	0.8	1.276	-3.19	
0.8	0	6.38	0.2	5.104	-1.276	grass/willow-13.1’
0.3	0.4	3.828	0.5	3.19	-0.638	willow-13.1’
1.3	0	6.38	0.1	5.742	-0.638	grass/willow-16.4’
0.3	0	6.38	0.4	3.828	-2.552	willow-16.4’
Segment Length (feet)	Segment Area (feet2)	Existing Summer Load (kWh/day)	Natural Stream Width (feet)	Potential Summer Load (kWh/day)	Potential Load minus Existing Load (kWh/day)	
11614.5	38424	6777	3.3	4518	-2259	
5805.6	38424	9036	6.6	4518	-4518	
1056.2	10394.2	3696	9.8	1232	-2464	
1584.2	15580.5	6469	9.8	1848	-4620	
4221.4	55414	32856	13.1	26285	-6571	
1584.2	20777.6	7393	13.1	6161	-1232	
6861.8	111932.7	66739	16.4	60066	-6674	
1584.2	2593.2	15401	16.4	9241	-6161	**% Reduction**
Total	**316892.8**	**148,367**		**113868**	**-34,499**	**-23**

Table D-8. Existing and Potential Solar Loads for Vick Creek.

Segment Length (~miles)	Existing Shade (fraction)	Existing Summer Load (kWh/m^2/day)	Target or Potential Shade (fraction)	Potential Summer Load (kWh/m^2/day)	Potential Load minus Existing load (kWh/m^2/day)	**Vick Creek**
2	0.8	1.276	0.8	1.276	0	forest-6.6'
0.3	0.7	1.914	0.8	1.276	-0.64	forest/shrub-9.8'
0.2	0.6	2.552	0.8	1.276	-1.28	
0.3	0.7	1.914	0.8	1.276	-0.638	
0.4	0.3	4.466	0.6	2.552	-1.914	willow-9.8'
0.4	0.4	3.828	0.6	2.552	-1.276	
Segment Length (feet)	Segment Area (feet^2)	Existing Summer Load (kWh/day)	Natural Stream Width (feet)	Potential Summer Load (kWh/day)	Potential Load minus Existing Load (kWh/day)	
10558.3	69272.9	8215	6.6	8215	0	
1584.2	15591.2	2773	9.8	1849	-924	
1056.2	10394.2	2465	9.8	1233	-1233	
1584.2	15591.2	2773	9.8	1849	-924	
2112.3	70778.3	8628	9.8	4930	-3698	
2112.3	70778.3	7396	9.8	4930	-2465	**% Reduction**
Total	**152426.2**	**32,251**		**23,006**	**-9,245**	**-29**

Table D-9. Existing and Potential Solar Loads for Mill Creek.

Segment Length (~miles)	Existing Shade (fraction)	Existing Summer Load (kWh/m2/day)	Target or Potential Shade (fraction)	Potential Summer Load (kWh/m2/day)	Potential Load minus Existing load (kWh/m2/day)	**Mill Creek**
1.3	0.8	1.276	0.8	1.276	0	forest-6.6'
0.5	0.7	1.914	0.8	1.276	-0.64	
0.3	0.5	3.19	0.8	1.276	-1.91	
0.2	0.5	3.19	0.8	1.276	-1.914	forest/shrub-6.6'
0.2	0.3	4.466	0.5	3.19	-1.276	willow-9,.8'
0.2	0.2	5.104	0.5	3.19	-1.914	
Segment Length (feet)	Segment Area (feet2)	Existing Summer Load (kWh/day)	Natural Stream Width (feet)	Potential Summer Load (kWh/day)	Potential Load minus Existing Load (kWh/day)	
6861.8	22509.9	2669	3.3	2669	0	
2640.4	17323.6	3082	6.6	2054	-1027	
1584.2	10394.2	3082	6.6	1233	-1849	
1056.2	6929.4	2054	6/6	822	-1233	
1056.2	10394.2	4314	9.8	3082	-1233	
1056.2	10394.2	4930	9.8	3082	-1849	**% Reduction**
Total	**77945.4**	**20,131**		**12,941**	**-7190**	**-36**

Table D-10. Existing and Potential Solar Loads for Mud Creek.

Segment Length (~miles)	Existing Shade (fraction)	Existing Summer Load (kWh/m2/day)	Target or Potential Shade (fraction)	Potential Summer Load (kWh/m2/day)	Potential Load minus Existing load (kWh/m2/day)	**Mud Creek**
0.6	0.8	1.276	0.8	1.276	0	forest-6.6'
3.5	0.7[a]	1.914	0.8	1.276	-0.64	forest
0.3	0.6	2.552	0.8	1.276	-1.28	forest
0.2	0.5	3.19	0.8	1.276	-1.914	forest/shrub-9.8'
0.5	0.3[b]	4.466	0.5	3.19	-1.276	willow-9.8'
0.2	0.5	3.19	0.5	3.19	0	willow
0.7	0.4	3.828	0.5	3.19	-0.638	willow
1.1	0.3	4.466	0.5	3.19	-1.276	willow
0.4	0.2	5.104	0.5	3.19	-1.914	willow
0.2	0.5	3.19	0.7	1.914	-1.276	forest/shrub-23.5'
0.7	0.4	3.828	0.4	3.828	0	willow-23.5'
0.7	0.3	4.466	0.4	3.828	-0.638	willow
0.7	0.2	5.104	0.4	3.828	-1.276	willow
3.5	0.2	5.104	0.3	4.466	-0.638	willow
0.7	0.2	5.104	0.3	4.466	-0.638	willow
Segment Length (feet)	Segment Area (feet2)	Existing Summer Load (kWh/day)	Natural Stream Width (feet)	Potential Summer Load (kWh/day)	Potential Load minus Existing Load (kWh/day)	
3168.5	20777.6	2464	6.6	2464	0	
18476.2	121211.4	21562	6.6	14375	-7187	
1584.2	10394.2	2464	6.6	1232	1232	
1056.2	10394.2	3080	9.8	1232	-1848	
2640.4	2593.2	10781	9.8	7701	-3080	
1056.2	10394.2	3080	9.8	3080	0	
3696.6	36368.8	12937	9.8	10781	-2156	
5805.6	57146.4	23718	9.8	16942	-6777	
2112.3	20777.6	9857	9.8	6161	-3696	
1056.2	24007.1	7187	23	4312	-2875	
3696.6	84853.4	30187	23	30187	0	
3696.6	84853.4	35218	23	30187	-5031	
3696.6	84853.4	40249	23	30187	-10062	
18476.2	118961.9	344992	39.5	301868	-43124	
3696.6	145453.7	68998	39.5	60374	-8625	**% Reduction**
Total	**388984.8**	**616,776**		**521,081**	**-95,694**	**-16**

a = solar pathfinder measured 71% shade; b = solar pathfinder measured 26% shade.

Table D-11. Existing and Potential Solar Loads for Little Mud Creek.

Segment Length (~miles)	Existing Shade (fraction)	Existing Summer Load (kWh/m2/day)	Target/ Potential Shade (fraction)	Potential Summer Load (kWh/m2/day)	Potential Load minus Existing load (kWh/m2/day)	**Little Mud**
0.2	0.8	1.276	0.8	1.276	0	forest-3.28 ‘
1	0.7	1.914	0.8	1.276	-0.64	forest
0.6	0.6	2.552	0.8	1.276	-1.28	forest
0.4	0.5	3.19	0.8	1.276	-1.914	forest/shrub-6.6 ‘
0.4	0.3	4.466	0.7	1.914	-2.552	willow-6.6’
0.5	0.2	5.104	0.7	1.914	-3.19	willow
0.3	0.5	3.19	0.8	1.276	-1.914	forest/shrub-9.8’
0.2	0.4	3.828	0.8	1.276	-2.552	forest/shrub
0.1	0.6	2.552	0.8	1.276	-1.276	forest/shrub
0.2	0.3	4.466	0.5	3.19	-1.276	willow-9.8’
0.5	0.2	5.104	0.5	3.19	-1.914	willow
1.6	0.3	4.466	0.5	3.19	-1.276	willow
0.3	0.2	5.104	0.5	3.19	-1.914	willow
0.1	0.2	5.104	0.5	3.19	-1.914	willow
0.2	0.2	5.104	0.4	3.828	-1.276	willow-6.6’
0.2	0.3	4.466	0.4	3.828	-0.638	willow
0.2	0.2	5.104	0.4	3.828	-1.276	willow
0.1	0.2	5.104	0.4	3.828	-1.276	willow
0.1	0.2	5.104	0.4	3.828	-1.276	willow
0.1	0.2	5.104	0.4	3.828	-1.276	willow
Segment Length (feet)	Segment Area (feet2)	Existing Summer Load (kWh/day)	Natural Stream Width (feet)	Potential Summer Load (kWh/day)	Potential Load minus Existing Load (kWh/day)	
1056.2	3464.7	411	3.3	411	0	
5277.5	17312.8	3080	3.3	2054	-1027	
3168.5	10394.2	2464	3.3	1232	-1232	
2112.3	12126.5	4107	6.6	1643	-2464	
2112.3	12126.5	5750	6/6	2464	-3286	
2640.4	17312.8	8214	6/6	3080	-5134	
1584.2	15580.5	4620	9/8	1848	-2772	
1056.2	10394.2	3696	9/8	1232	-2464	
528.1	5197.1	1232	9/8	616	-616	
1056.2	10394.2	4312	9/8	3080	-1232	
2640.4	2593.2	12321	9/8	7701	-4620	
8446	131325	34499	9/8	24642	-9857	
1584.2	15580.5	7393	9/8	4620	-2772	
528.1	5197.1	2464	9/8	1540	-924	
1056.2	17312.8	8214	16.4	6161	-2054	
1056.2	17312.8	7187	16.4	6161	-1027	
1056.2	17312.8	8214	16.4	6161	-2054	
528.1	8661.8	4107	16.4	3080	-1027	
528.1	8661.8	4107	16.4	3080	-1027	
528.1	8661.8	4107	16.4	3080	-1027	**% Reduction**
Total	**325554.6**	**130,501**		**83,886**	**-46,615**	**-36**

Table D-12. Existing and Potential Solar Loads for Middle Mud Creek.

Segment Length (~miles)	Existing Shade (fraction)	Existing Summer Load (kWh/m2/day)	Target or Potential Shade (fraction)	Potential Summer Load (kWh/m2/day)	Potential Load minus Existing load (kWh/m2/day)	**Middle Mud**
0.6	0.6	2.552	0.8	0.638	-1.276	forest-3.3’
0.4	0.5	3.19	0.8	0.957	-1.91	forest/shrub-3.3’
0.9	0.3	4.466	0.7	1.914	-2.55	willow meadow
0.7	0.5	3.19	0.8	0.957	-1.914	forest/shrub-6/6’
0.7	0.6	2.552	0.8	0.957	-1.276	forest/shrub
0.6	0.5	3.19	0.8	0.957	-1.914	forest/shrub
0.2	0.2	5.104	0.6	2.552	-2.552	willow-6.6’
Segment Length (feet)	Segment Area (feet2)	Existing Summer Load (kWh/day)	Natural Stream Width (feet)	Potential Summer Load (kWh/day)	Potential Load minus Existing Load (kWh/day)	
3168.5	10394.2	2464	3.3	1232	-1232	
2112.3	6929.4	2054	3.3	821	-1232	
4749.4	15580.5	6469	3.3	2772	-3696	
3696.6	24007.1	7187	6.6	2875	-4312	
3696,.6	24007.1	5750	6.6	2875	-2875	
3168.5	20777.6	6161	6.6	2464	-3696	
1056.2	6929.4	3286	6.6	1643	-1643	**% Reduction**
Total	**102166.2**	**30,084**		**13,040**	**-17,044**	**-57**

Table D-13 Existing and Potential Solar Loads for Big Creek

Segment Length (miles)	Existing Shade (%)	Existing Load (kWh/m^2/day)	Target Shade (%)	Potential Load (kWh/m2/day)	Potential minus Existing load (kWh/m2/day)	**Big Creek**
1	0.8	1.276	0.8	1.276	0	forest-3.3’
0.7	0.7	1.914	0.8	1.276	-1	forest-6.6’
0.7	0.6	2.552	0.8	1.276	-1	forest
0.2	0.5	3.19	0.8	1.276	-1.914	forest
0.5	0.7	1.914	0.8	1.276	-0.638	forest
0.2	0.6	2.552	0.8	1.276	-1.276	forest
0.2	0.5	3.19	0.8	1.276	-1.914	forest/shrub-9.8’
0.5	0.6	2.552	0.8	1.276	-1.276	forest/shrub
0.9	0.5	3.19	0.8	1.276	-1.914	forest/shrub
1.3	0.4	3.828	0.5	3.19	-0.638	willow-13.1’
0.2	0.3	4.466	0.5	3.19	-1.276	willow
0.2	0.4	3.828	0.5	3.19	-0.638	willow
0.5	0.3	4.466	0.5	3.19	-1.276	willow
0.2	0.5	3.19	0.7	1.914	-1.276	forest/shrub-16.4’
0.3	0.3	4.466	0.4	3.828	-0.638	willow-16.4’
0.2	0.2	5.104	0.4	3.828	-1.276	willow
0.2	0.5	3.19	0.7	1.914	-1.276	forest/shrub-23’
0.5	0.4	3.828	0.7	1.914	-1.914	forest/shrub
0.5	0.3	4.466	0.7	1.914	-2.552	forest/shrub
0.9	0.2	5.104	0.4	3.828	-1.276	willow-23’
3.1	0.08	5.8696	0.1	5.742	0	grass/willow-29.5’
0.2	0.2	5.104	0.3	4.466	-0.638	willow-29.5’
0.2	0.25	4.785	0.3	4.466	0	willow
0.4	0.1	5.742	0.3	4.466	-1.276	willow-39.5’
Segment Length (feet)	Segment Area (ft^2)	Existing Load (kWh/day)	Stream Width (feet)	Potential Load (kWh/day)	Potential Load minus Existing Load (kWh/day)	
5277.5	17312.8	2054	3.3	2054	-1027	
3696.6	24007.1	4312	6.6	2875	-2875	
3696.6	24007.1	5750	6.6	2875	-4312	
1056.2	6929.4	2054	6.6	821	-1643	
2640.4	17312.8	3080	6.6	2054	-2054	
1056.2	6929.4	1643	6.6	821	-1232	
1056.2	10394.2	3080	9.8	1232	-2033	
2640.4	2593.2	6161	9.8	3080	-3542	
4749.4	46752.2	13861	9.8	5545	-9148	
6861.8	11932.7	40044	16.4	33370	-6674	
1056.2	17312.8	7187	16.4	5134	-2054	
1056.2	17312.8	6161	16.4	5134	-1027	
2640.4	43287.5	17968	16.4	12835	-5134	
1056.2	17312.8	5134	16.4	3080	-2875	
11584.2	2593.2	10781	16.4	9241	-2310	
1056.2	17312.8	8214	16.4	6161	-2567	
1056.2	24007.1	7187	23	4312	-3019	
2640.4	60611.1	21562	23	10781	-11140	
2640.4	60611.1	25156	23	10781	-14734	
4749.4	109995.6	51749	23	38812	-12937	
16363.9	48312.4	263549	29.5	257820	0	
1056.2	31171.7	14785	29.5	12937	-2772	
1056.2	31171.7	13861	29.5	12937	-1848	
2112.3	83121	44356	39.5	34499	-9857	**% Reduction**
Total	**129477j9.4**	**579,689**		**479.190**	**-93,846**	**-16**

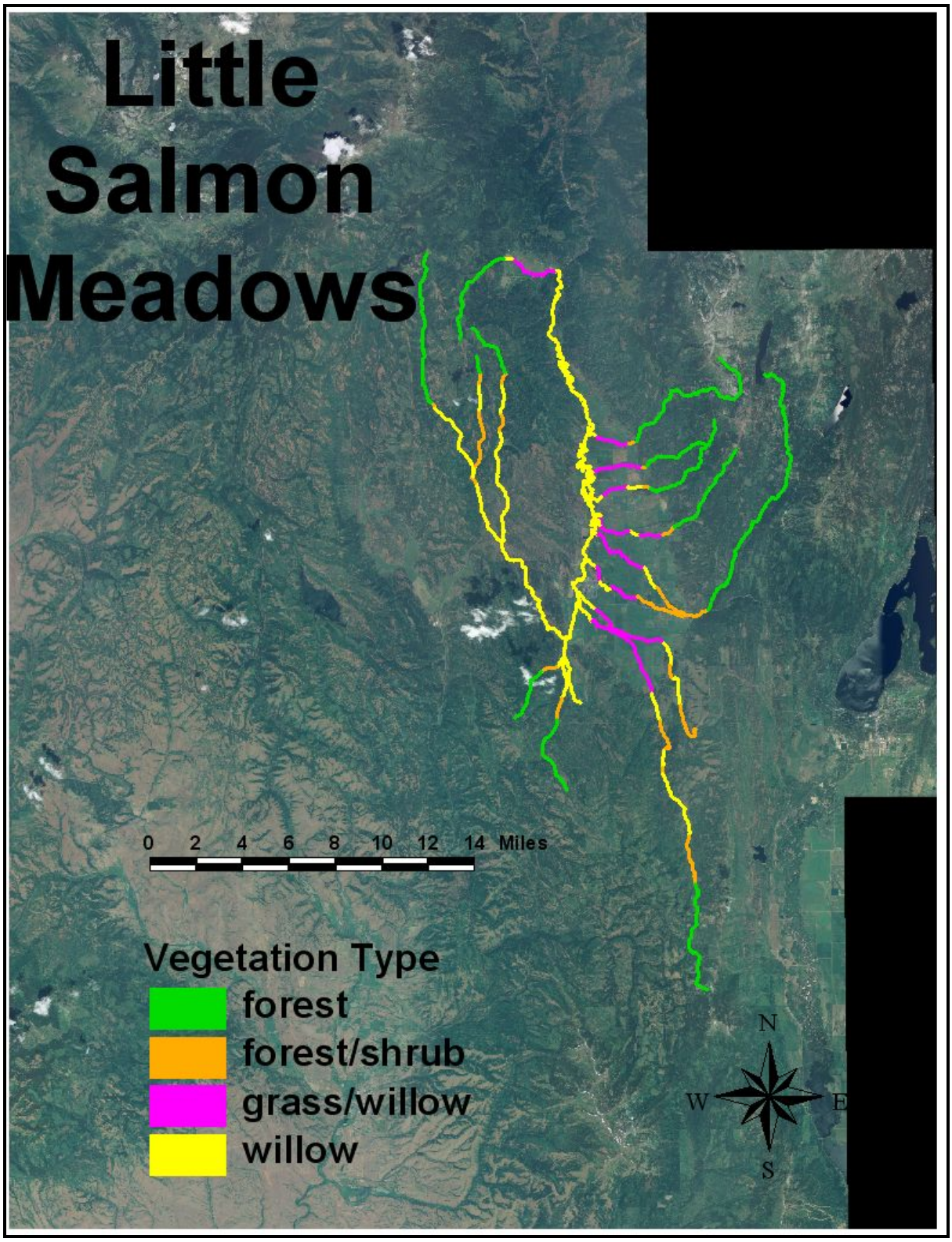

Figure D-1. Little Salmon River Vegetation Types.

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Appendix E. Public Participation and Public Comment

Comment	Response
Adams Soil and Water Conservation District	
1. Pg xxi: Under Little Salmon River from Round Valley to mouth: *several government agencies* **Comment:** What specific agencies have pointed out..?	Specified that in particular this was the US BOR and BLM.
2. Pg xxii: *Big Creek load capacities were based on the same targets…* **Comment**: State what the target is exactly.	Specified the targets
3. Pg 9: Table 2 is a description of soil attributes: *Fig 4 shows location of major soils in the basin* **Comment**: Add a period after basin.	Corrected error
4. Pg 12: Figure 5 map **Comment:** map needs a legend.	There is a legend on the side of the map.
5. Pg 49: Bacteria- paragraphs 2 and 3 **Comment:** Add a statement about what the differences are between point and non-point source pollution.	Defined point and non-point source pollution and added information to paragraph 2
6. Pg 50: *Recent studies have shown…* **Comment:** Is this cattle study from a good source? Are there any other studies you have found on this to add?	The study is from the USDA and Cornell University which DEQ deemed a good source.
7. Pg 53: Paragraph 3 **Comment:** Tree fall is important and often essential for maintaining stream stability is either in the wrong place or should be omitted. This statement sounds repetitious.	That sentence is repetitive and it has been removed.
8. Pg 60-62: Figures 18-21 **Comment:** Add days on y axis	Comment noted
9. Pg 63: Paragraph 1: *an agricultural drain….* **Comment:** Are you talking about a specific drain, or draining itself? Please specify.	A specific drain—this has been clarified.
10. Pg 66: Paragraph 1 >6 mg/l **Comment:** Should it be <6mg/l?	This has been corrected to < 6 mg/L
11. Pg 68: Conclusions...*The ISDA conducted…* **Comment:** State what were the findings and if there weren't any pollutants, state that.	A clarifying sentence was added.

Comment	Response
12. Pg 69: Paragraph 2 **Comment:** Who did the study?	USBR is proposing studies in this area but the sentence stating that the study is underway has been deleted because funding for this study has not been acquired.
13. Pg 149: Paragraph 6: comparison of aerial photos **Comment:** Do you have any on-the-ground data for those reaches? Do you think the aerial photography is sufficient enough to determine developmental impacts?	Yes, there is data for Shingle Creek. Any additional data would be welcomed. Aerial photography is sufficient to look at the effects of skid trails/road development in the forested part of the watershed.
14. Pg 166: Paragraph 2 on WAGs **Comment:** A better definition of what the WAG actually does would be helpful.	A sentence has been added.
15. Pg 167: Paragraphs 2 and 3 **Comment:** Do SCD(s) really take the lead if non-point source pollution needs to be addressed?	Clarified that SCC has the lead and that SCDs also have a pivotal role.
16. Pg 176: solar pathfinder data... **Comment:** We don't know if three sections of the river are sufficient to verify aerial photo interpretation.	We encourage the Soil Conservation District to submit additional data and DEQ will incorporate that into the verification process.
17. Pg 178: shade estimate map **Comment:** Could you please label the creeks and tributaries taken into account?	The creeks will be labeled in the final submittal of the TMDL to the EPA.
18. Pg 179: Paragraph 3 a landowner *could* evaluate… **Comment:** Change could to **should** evaluate the current shade with a solar pathfinder.	Will make change and also put in sentence stating that the SCDs now have solar pathfinders
19. Pg 226: Temperature Analysis **Comment**: A statement needs to be made on target selection as far as; a modified SVAP should be done on tributaries to get an accurate shade target for a section of the stream. It seems like the shade model puts a hammer down on landowners for percent shade that can logically be achieved in a reach. Who is held responsible if percent shade is in violation? One landowner? All landowners along the reach? On existing loads—the loads are pretty high in some areas. What is the basis of the potential load targets on the model? How were the calculations done for the reductions? The reductions seem unattainable on parts of Goose Creek and Mud	TMDLs are voluntary for nonpoint sources. The specifics of how the targets are going to be reached will be outlined in the implementation plan. In the implementation process, it is up to the WAG, SCD, and affected landowners to determine an implementation strategy for each particular waterbody. Implementation is typically based on practices that will be effective and economically feasible. Please read the section on Temperature in Section 5 for an explanation of target selection. The load reductions are based on the existing shade (or existing solar heat that gets to the stream) subtracted from what the

Comment	Response
Creek.	potential shade is. The loads are likely high in areas where it was determined that there would be a shrub community and right now there isn't one. When a stream is not that wide (Mud Creek) the difference between shade with partial shrub coverage vs.full density is large because the overhang from the shrubs results in high shading values. Thus, this reduction is likely achievable. There are parts of Goose Creek that are already at potential shade. A further explanation of why the 17% increase in shade is unachievable is needed in order to change the shade targets.
IDFG	
1. IDFG agrees with TMDL s for the upper mainstem Little Salmon River; agrees that aerial analysis of thermal infrared showed no thermal influence by adjacent hot spring discharge in August. A listing for habitat alteration in the lower Little Salmon River is reasonable. TMDLs for bacteria and nutrients in Big Creek are supported by findings as is recommendation to list East and West Branches of Goose Creek on the 303(d) list.	Comments noted
2. Stream temperatures monitored in Mud Creek, averaged over the past five years, indicate exceedances for cold water aquatic biota of 15%. In only one year of the past four did temperature exceed criteria by only the allowed 10%. This very marginal support coupled with the fact that the location of this monitoring station is at least two miles upstream from the confluence with the Little Salmon River and that shading is very limited throughout the lowermost reaches of Mud Creek leads to a recommendation for a temperature TMDL for Mud Creek.	Mud Creek will continue to be monitored and if the creek exceeds the temperature standard, then it will be proposed for 303(d) listing. At this time, the creek appears to support beneficial uses.
3. The recent BURP inventory for Little Mud Creek is not included in this assessment	The waterbody assessment scores are not available because the macroinvertebrate data has not been processed. However, information on habitat parameters will be included in the final report submitted to EPA.
4. Determinations of Four Mile, Three Mile and	The executive summary will be changed to

Comment	Response
Martin Creeks were made with limited data collected only in upper, forested reaches. The assessment of Six Mile Creek relied on one survey in the forested reach and one in the upstream section of private pasture land, approximately one mile upstream from the confluence with the Little Salmon River. In the conclusions in Section 2, it is stated that " A beneficial use support status call cannot be made on the lower sections of these creeks due to lack of information." Yet your executive summary categorizes these streams as simply 'not impaired'. This is an incorrect statement. The statement should be corrected to state that the status of these streams is 'undetermined.'	better reflect the assessments made further in the document.
5. I question as to why additional data were not collected in the lower reaches of these four streams. The reason given is that they were not on the 303(d) list, however a fairly thorough assessment was completed in Goose Creek, also not on the original list.	Additional data was not collected on Six Mile Creek due to several factors including the presence of a BURP site that showed full support and lack of access during the 2005 field season. Data was collected on Four Mile Creek for the purposes of looking at nutrient loading to the Little Salmon River. Four Mile, Three Mile and Martin Creeks were assumed to be similar to Six Mile Creeks. A BURP site was selected on Goose Creek by our stream inventory program by a similar process that resulted in the site selection for Six Mile Creek. The analysis of Goose Creek and Six Mile Creek are relatively similar with the exception that the forested reaches of Goose Creek were used for ground truthing of the aerial photography analysis of shading.
Association of Idaho Cities	
The SBA and TMDL needs to include temperature data and analyses that have been collected by USGS in the Little Salmon Basin. The USGS report titles are: *A Statistical Model for Estimating Stream Temperatures in the Salmon and Clearwater River*	Thank you for this information. Where pertinent, this information will be added to the final submittal. Much of the temperature information presented in the TMDL is more recent than that from the USGS report and thus, not all the USGS data will be incorporated.

Comment	Response
Basins, Central Idaho by Mary M. Donato, Water Resources-Investigations Report 02-4195 *Aquatic Assemblages and Their Relation to Temperature Variables of Least-Disturbed Streams in the Salmon River Basin, Central Idaho, 2001*by Douglas S. Ott and Terry R. Maret, Water Resources-Investigations Report 03-4076	The fact that this report shows that reference streams do exceed bull trout temperature criteria is relevant and we appreciate that you passed this information on to DEQ.
2. The AIC recommends that DEQ employ the SNTEMP model to determine the natural background temperature of the river. This would allow a better calculation of the temperature effluent limit for the wastewater treatment plant.	The endpoint of the potential shade model and SNTEMP are the same—both result in determining the % shade necessary to cool the stream. However, the point is well taken that determining the natural background temperature at the site of the wastewater treatment plant outfall would be useful. DEQ has employed QUAL 2K in the LSR watershed which DEQ believes is a better model than SNTEMP and will look into the applicability of the information for modeling temperature at that point in the stream.
A "least cost" allocation approach would allow the waste water facility planning efforts to target the cost effective nutrient removal technologies and work collaboratively with the non-point source control programs in order to achieve the water body support targets.	At the time of the writing of this TMDL, DEQ understood that the WWTP plant would not discharge during the critical period even at full capacity. Thus, the load allocation would easily be met. If information is provided by the city that shows that this is not the case, a new wasteload allocation will be determined in consultation with the WAG. Only gross allocations were presented in this TMDL, allocation strategies are to be further worked out during the implementation plan (i.e. tributary reductions).
The TMDLs do not provide any reserve for future growth or allowance for discharge of stormwater for any of the pollutants proposed for controls. As New Meadows and other portions of rural Idaho grow and highways are built, increases in wastewater and/or stormwater discharges to surfaces waters are likely. If the TMDL contains no municipal reserve for growth (e.g. wastewater and/or stormwater) , the TMDLs will function as effective caps on growth and development in the Little Salmon Basin and statewide and drive up	The TMDLs do provide a reserve for growth in the wasteload allocation by designing the allocation to be at maximum design capacity—the treatment plant is not at that level now. New Meadows is not regulated as a municipality (MS 4) by the EPA nor is it likely to be unless the population reaches 50,000. These statements refer to a situation

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the costs of highway design and construction (e.g. 100% retain on site, no surface water discharge…).	where a town is regulated as an MSR. This is not the case in New Meadows and thus, the statements that the TMDL will cap development or increase the cost of highway development are erroneous. The nutrient and bacteria targets are reasonable and can be met. Stormwater can be discharged but it must meet the bacteria and nutrient standards. There is no sediment TMDL which would be the primary pollutant present in highway discharge.
Jim Blair, LSR WAG Member	
1.It is stated on page 98 that beneficial use support status cannot be determined for 6, 4, & 3 mile creek below the Forest Service boundary due to lack of information. Is there a plan in this somewhere to monitor it in the future? My concerns are surface irrigation waste water being superheated by solar influences and returning to these creeks and thus to the Little Salmon River. I also feel this could be a contributing source of TP and E. Coli pollutants. 2.I do not see a implementation plan to address how T.P. and E. Coli levels are going to be reduced at Big Creek and the Little Salmon River. Is that yet to be decided by the WAG? 3.On page 169 in the 1st sentence it should include heated surface irrigation waste water return to the streams and river as a contributing source of heat due to super heating of surface water while on the fields, from solar radiation. I am sure there is a substantial amount of surface waste water returning to the streams and river since the valley is irrigated predominantly by flood irrigation, the most inefficient form of irrigation when it comes to waste water control and conservation of water. I would be inclined to think this waste water be a major contributor of the high organophosphates, E.Coli from manure, and heated water, although the phosphates and E. Coli can also come from the percolated irrigation subsurface ground water that reaches the streams and river. If air temperatures in the shade are in the 80's and 90's in July and August and the water is coming into the system already heated, I don't think that shade is	Monitoring may occur if access to the streams can be obtained. However, it is important to note that TMDLs cannot be written for flow alteration. Although diversions may affect heating, DEQ cannot regulate water rights and the ensuing flow management. However, if there are stakeholders that want to address heating of water due to flow modification, they can do so in the implementation phase. The implementation portion of the TMDL will be written separately within 18 months of TMDL approval. Additional monitoring may occur as part of implementation planning. A sentence will be added that states that flow alteration may result in a contribution of heat. Phosphorus and bacteria may come from both surface and groundwater sources. Shade will help not only by preventing solar radiation from heating the stream surface but the vegetation will also act as a filter, provide bank storage (water stored in the banks that is released later in the season), and provide bank stability preventing excess widening of the stream.

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going to solve the problem. Granted, it will help reduce further heating of the water, but it won't reduce it if it is already to warm.	
EPA	
Little Salmon River ID17060210SL007_04 was listed on the 2002 303(d) for temperature. It is not included in Table A, Table C, Table 8. Also, you noted on page 57 that the Little Salmon River is split into two assessment units on the 2002 303(d) list. The list sent by Mike Edmonston shows three assessment units: ID17060210SL001_02 Little Salmon River – Round Valley Creek to mouth sediment; ID17060210SL007_05 Little Salmon River - 5th order unknown; and ID17060210SL007_04 Little Salmon River - 4th order temperature (see attached). Please explain this discrepancy.	The 2002 303(d) list used by the Boise Regional Office did not include that section of the Little Salmon River. The oversight has been corrected. That section of the Little Salmon River did receive a temperature allocation and this oversight will be corrected.
Pages xix and 41 You have named agencies under listing basis instead of the actual basis or justification for the listing (WBAG, exceedance documented, low metric scores, 1996 carryover etc.) for Table A and Table 8.	Comment noted
Page xxiii Table C does not include all the waters assessed by IDEQ, either include all the waters assessed or rename the table. Is this a table that Summarizes Assessment Outcomes for Waters Included on the 2002 303(d) List? Brundage Reservoir's assessment unit should be SL011L-0L. The 2002 303(d) list shows Brundage Reservoir listed for temperature so it should be delisted for temperature not an unknown pollutant.	The Table has been renamed since it refers to streams on the 303(d) list.. The listing for Brundage Reservoir has been corrected to reflect that it is for temperature not unknown and the assessment unit notation has also been corrected.
Pages 41-44 Include IDEQ's natural condition water quality standard provisions in the section on "Applicable Water Quality Standards" as you refer to them in other parts of the document including the executive summary.	IDEQ's natural condition water quality standard has been incorporated
Page 43 Under Table 9 Little Salmon River Subbasin beneficial uses of 303(d) listed streams, you include Boulder Creek. You also include this same creek on the following table of assessed non-listed waters. Is Boulder Creek on the 2002 303(d) list? If not, please remove Boulder Creek from Table 9.	This mistake has been corrected—Boulder Creek is not on the 303(d) list.

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Page 74 On Table 15, you indicate the Mud Creek is "Not Full Support" and later state "Beneficial uses appear to be supported in the upper reaches of Mud Creek." Please explain this discrepancy.	The score you are referring to precedes a later full support score. DEQ assumed that the more recent data had precedence over the old data and thus stated that beneficial uses were supported.
Page 107 Hazard Creek and Hard Creek are listed in the July 31, 1997 Federal Register Notice on temperature criteria for bull trout in Idaho. Do these creeks meet the EPA WQ criteria for bull trout or does this criteria not apply and why not?	The criteria does apply and DEQ will collect solar pathfinder information this summer to demonstrate whether or not there is excess heat load. This is a fairly pristine stream in which beneficial uses appear to be fully supported. Natural background temperatures may be above the standard.
Pages 146 149 IDEQ listed Shingle Creek for sediment. IDEQ states "1995 Biological Assessment reported extensive grazing on private lands in the lower watershed, with severe riparian impacts…The 1995 Biological Assessment noted that a youth mission camp development along Shingle Creek has caused severe impact to the riparian area." IDEQ concludes "The beneficial uses in Shingle Creek are not impaired" based on extrapolated water body assessment scores from other nearby creeks--South Fork Shingle Creek and upper Shingle Creek. Given the "severe impacts to the riparian area," no rationale provided on why these other creeks' water body assessment results are appropriate to use for extrapolation to the rest of the watershed, and no explanation on why sediment is no longer a problem in Shingle Creek, it seems like a water body assessment should be conducted before concluding that the entire watershed is not impaired, no TMDL needs to be developed and Shingle Creek should be removed from the 303(d) list.	Various sediment metrics were calculated for Shingle Creek on a reach adjacent to the former youth camp. This information has been added to the TMDL. At the time the assessment was conducted it was too late in the season to conduct macroinvertebrate surveys so only sediment metrics were examined. Impairment was not evident.
Page 180 Please provide the calculation used to determine the wasteload allocation for temperature for the New Meadows Wastewater Treatment Plant shown in Table 37.	The wasteload calculation used an incorrect target which has been corrected (this did not effect the overall load reduction). The calculations were provided to EPA during the public comment period and will be included in an appendix in the final document
Page 181, 183, 185, 186 Please provide the data and calculations for determining existing loads, natural background, loading capacity and load allocations.	

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. Page 185 4th paragraph, you stated Nonpoint source allocations and WLAs are presented in Table 38 and 39. Actually they are presented in Tables 39 and 40. Page 186 Please title Table 40 New Meadows WWTP Wasteload Allocation and the middle column wasteload allocation, as load allocation are for nonpoint sources and WWTP is considered a point source.	This has been corrected. This has been corrected.

WAG Consultation

DEQ has complied with the WAG consultation requirements set forth in Idaho Code § 39-3611. A WAG was officially formed in May 2004 for the Little Salmon River TMDL. DEQ provided the WAG with information concerning applicable water quality standards, water quality data, monitoring, assessments, reports, procedures, and schedules. The Little Salmon River WAG was officially recognized by DEQ in May of 2004. The group met regularly over the course of the development of the TMDL in New Meadows. In 2005, the WAG met January 31st, April 5th, June 14th, August 23rd, September 15th and December 8th. In 2004, the WAG met on May 17th , July 12th and September 15th.

DEQ utilized the knowledge, expertise, experience and information of the WAG in developing this TMDL. DEQ also provided the WAG with an adequate opportunity to participate in drafting the TMDL, reviewing draft versions of the TMDL and suggesting changes to the document.

Concern from some WAG members was expressed at the high reductions required for Big Creek for bacteria. In particular, those WAG members wondered if these reductions were possible. A WAG member pointed out that the E. coli present from the largely grass fed cows in the Meadows Valley area are far less virulent then the strains of E. coli that are excreted from grain fed cows.

At the end of the September 15, 2005 meeting of the Little Salmon River WAG, the WAG members present voted their approval to go out for public comment with the Little Salmon River TMDL. A public meeting was held on November 10th, 2005. The three WAG members present at a meeting on February 9, 2006 voted their approval to submit the final draft to EPA. Since a majority was not present, a majority vote was solicited by DEQ by mail and email. A majority vote was obtained on February 22nd .

One WAG voting member voted against submitting the TMDL to EPA because he felt that the sections on Mud Creek, Three Mile Creek, Four Mile Creek, Six Mile Creek and Martin

Creek were impaired for beneficial uses and that additional data needed to be collected to ascertain whether on not this is the case. He stated that there had been significant discussion of these creeks and whether or not they were impaired but additional monitoring was not conducted during the course of TMDL development.

He stated that Kirk Campbell from the Idaho Department of Agriculture in his report "Little Salmon River Year Two Water Quality Report April 2005 through October 2005" that beneficial uses are impaired from data he collected on the Four Mile Creek site as well as other sites to be higher amounts than what meets the state tolerances. Mr. Campbell also stated at the December 2005 WAG meeting that Four Mile Creek was impaired rather than undetermined. The WAG member stated at that meeting that Leslie Freeman from DEQ said she would check into the alternatives of listing Three Mile, Four Mile and Martin Creek. That has not been done to this member's satisfaction.

The WAG member went on to state that these creeks are likely to be elevated nutrient/bacteria/temperature transporting streams that flow into the Little Salmon River as described by Kirk Campbell in his report on Four Mile Creek because of their similarity.

Also, DEQ did not include information in the TMDL on proposed monitoring in 2006 of Four Mile, Three Mile, Martin, Squaw and Six Mile Creeks (monitoring that was supported by a vote of the WAG). The member also stated that DEQ did not clearly delineate that lack of information prevented the agency from making a beneficial use support status call on the lower reaches of these creeks (see section 2 for more details on these specific streams). In addition, 2005 monitoring information was not presented in the TMDL.

The Idaho Department of Agriculture will monitor those streams if they can obtain access to them from the landowners in 2006. The WAG member emphasized that documentation of whether or not access was granted by landowners needed to occur in the TMDL in order to lend credibility to the document. Four Mile Creek was monitored sporadically in 2005 but not enough data was collected to make a determination on beneficial use impairment or unimpairment. This past and future monitoring will help delineate nutrient/bacteria loading to the system for the purposes of implementation planning for the mainstem Little Salmon River. If information regarding beneficial use impairment is gathered during this monitoring, it may be submitted to DEQ for 303(d) (integrated report) listing.